

Medical Skill application

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Medical Skills Applications

Part I

Approach to a sick child

Part II

- 1- Blood pressure cuffs
- 2- Temperature machine
- 3- Pulse oximetry
- 4- Growth charts
- 5- Auto scope
- 6- Glucometer
- 7- Urine dipstick
- 8- Urinary Cath
- 9- Iv cannula
- 10- I O line

Part III

clinical scenario

Martials and Equipment's

Gloves

Antiseptic solution

Alcohol swap

Pulse oximetry

Lubricant

Thermometer

Glucometer

Urine dipstick

Auto scope

Syringe 10, 1 cv

Brose law tape

Urine container

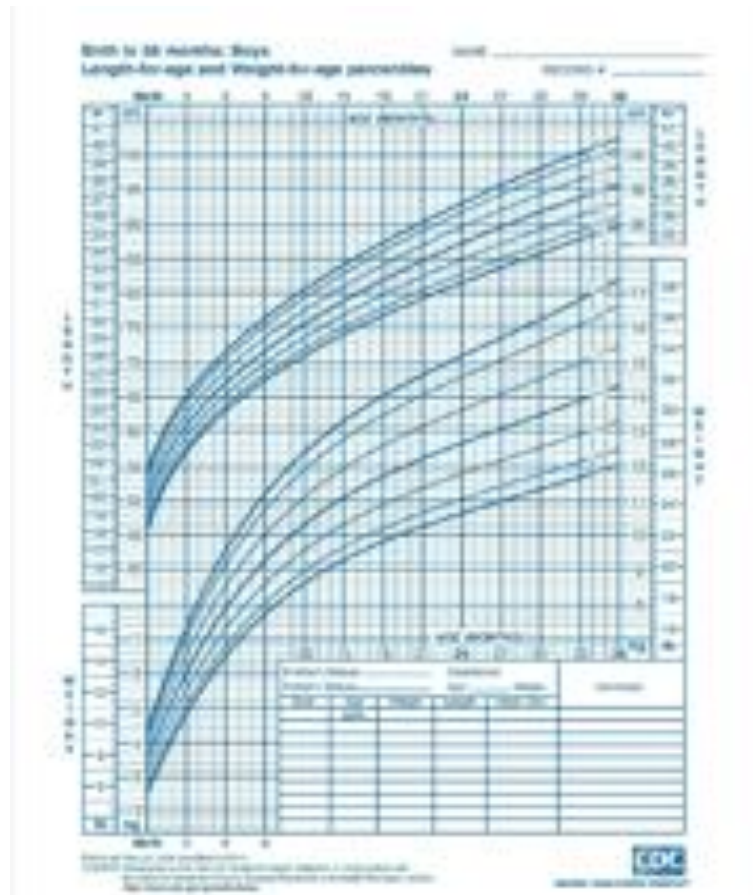
Routine Assessment

General assessment

Growth chart

Vital signs

Growth chart






Body Mass Index

$$\text{Body Mass Index} = \frac{\text{Weight (in kg)}}{\text{Height}^2 \text{ (in m)}}$$

Body Mass Index

WHO Classification

Associated risks

	BMI between 18.5 and 25 : normal weight	Normal
	BMI between 25 and 30 : overweight	Average
	BMI between 30 and 40 : obesity	Important
	BMI above 40 : morbid obesity	Severe

Normal Pediatric Vitals

☐ HR (beats/min)

- Newborn -3 mo: 100-160
- 3 mo - 2 yrs: 90 -150
- 2 yrs - 10 yrs: 60 -140
- > 10 yrs: 60 -100

☐ Temp

Core Temp $> 38^{\circ}\text{C}$

Wt Estimation

- < 8 yrs: $8 + (2 \times \text{age})$
- > 8 yrs: $3 \times \text{age}$

Brose low-Tape

☐ RR (breaths/min)

- Newborn - 3 mo: 30-60
- 3 mo - 2 yrs: 30 -50
- 2 yrs - 10 yrs: 22-35
- > 10 yrs: 12-20

☐ BP

- Newborn - 60 mm Hg
- Infant - 70 mm Hg
- Children 1-10 yrs $\{70 + (2 \times \text{age in yrs})\}$
- > 10 yrs - 90 mm Hg

Temperature

- **Core temp = Rectal $> 38\text{ }^{\circ}\text{C}$**
 - **Oral $> 37.8\text{ }^{\circ}\text{C}$**
 - **Temp $> 37.5\text{ }^{\circ}\text{C}$**
 - **Axillary $> 37.2\text{ }^{\circ}\text{C}$**
- hypothermia if core Temp $< 35\text{ }^{\circ}\text{C}$**

Pulse oximeter

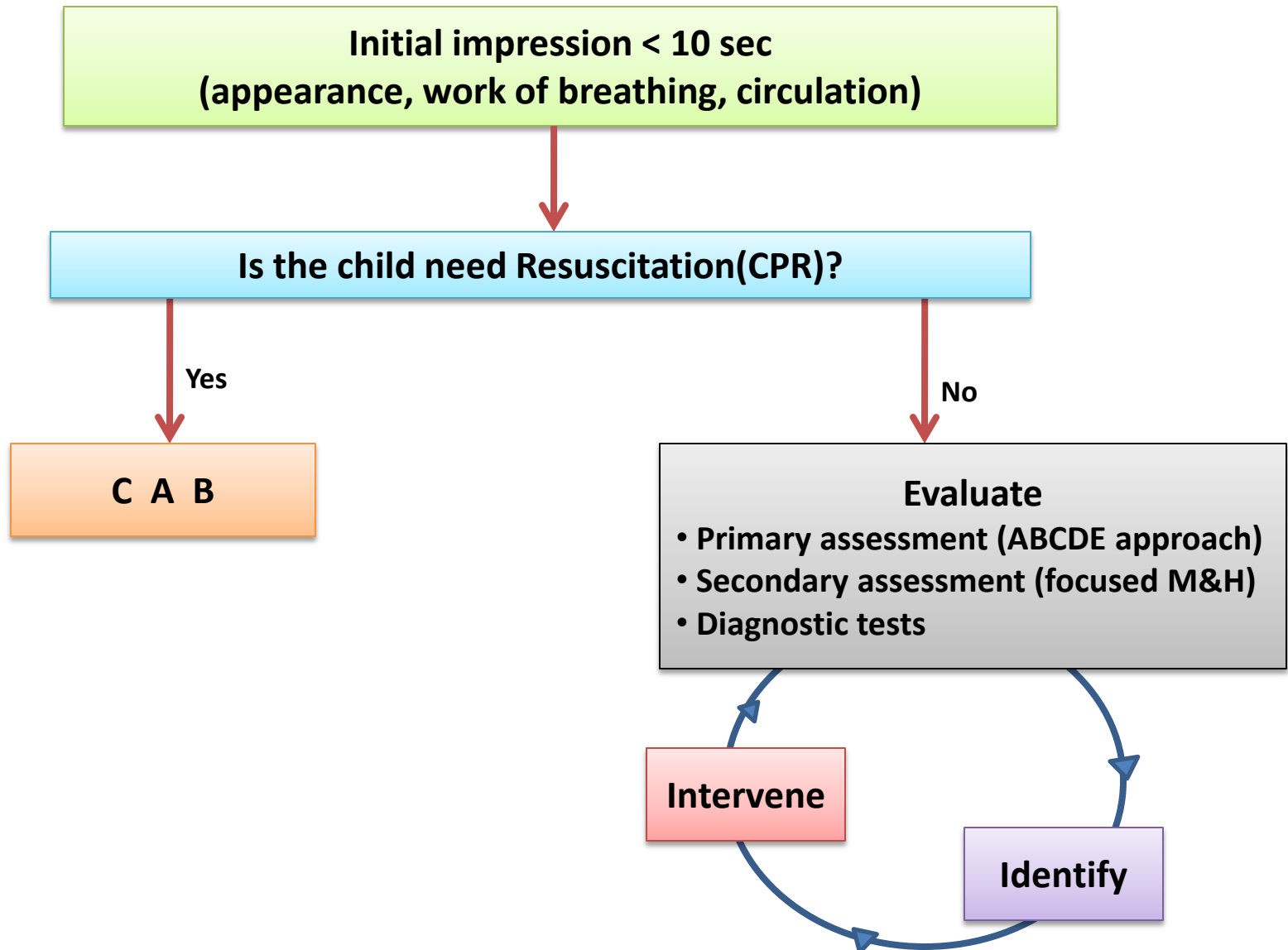


Brose low-Tape





Systematic Approach to a sick child



Systematic Approach to a sick child

- ❑ Initial impression
- ❑ Primary survey (ABCDE)
- ❑ Secondary survey
- ❑ Diagnostic tests

Circulation

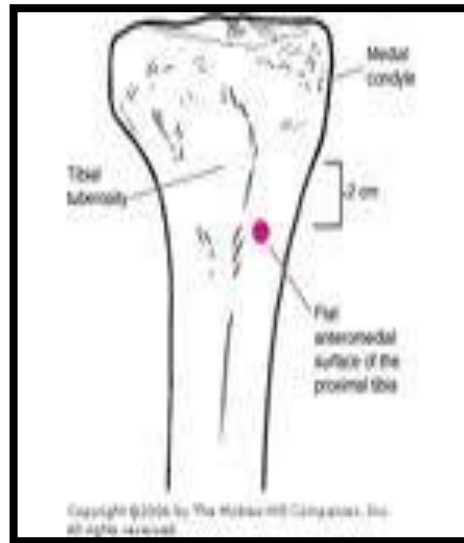
IV canula

INTRAOSSEOUS CANNULATION



INTRAOSSEOUS CANNULATION

- ❑ 2cm below tibial tuberosity
- ❑ 2cm above medial malleolus
- ❑ Distal femur



Indications

- Obtain emergency access in children during life-threatening situations. cardiopulmonary arrest, shock, burns, and life-threatening status epilepticus.
- IO line can be used to infuse medications, blood products, or fluids.

Contra-Indications

- Fractures/vascular trauma
- Localised infection (cellulitis/osteomyelitis)
- Prosthetic joints near site
- Previous IO attempts
- Osteoporosis
- Inability to identify insertion site



Bone Injection Gun

BIG



Drill Driver with needle



Glucometer

- 5-8 mg/kg/min
- Normal: 4-6 mmol/L
80-110 mg/dl

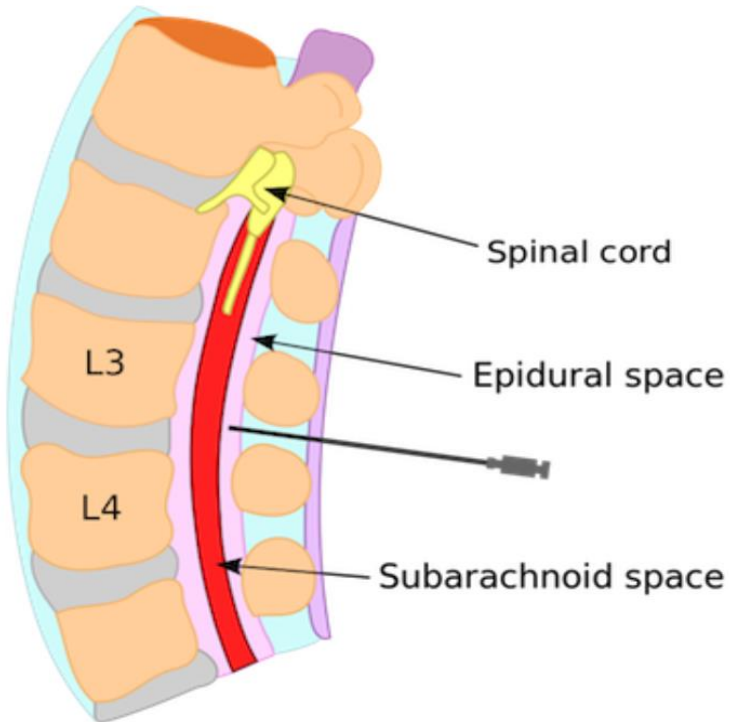
Hyperglycemia > 180 mg/dl or > 10 mmol/L

HBA1C > 6

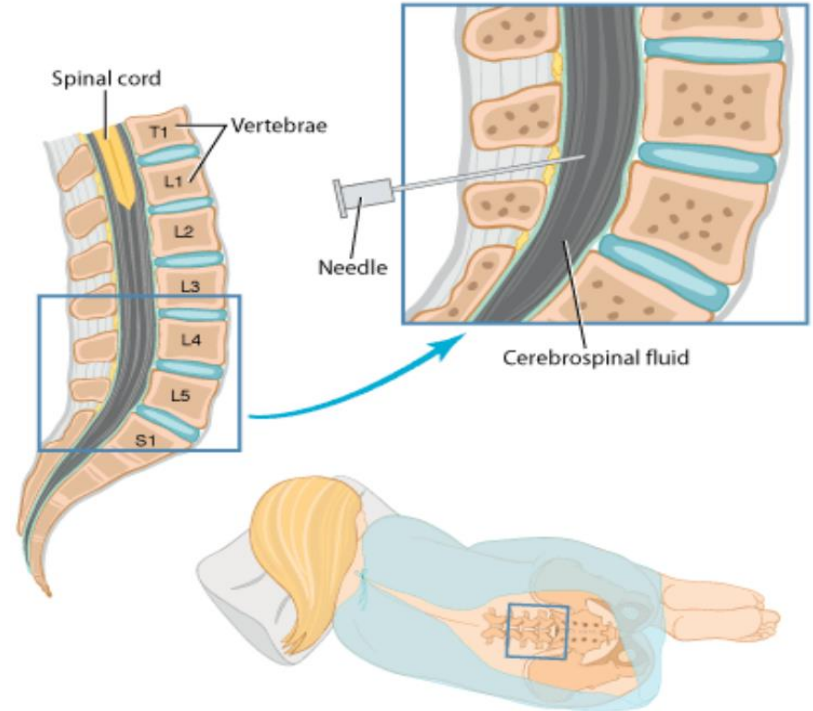
Lumber Puncture



Lumbar Puncture



Lateral recumbent
Sitting position



Lumber Puncture

LUMBAR PUNCTURE

- Lumbar puncture (LP) is usually a safe procedure.
- Major complications: extremely uncommon, include
 - cerebral herniation
 - injury to the spinal cord or nerve roots
 - hemorrhage
 - infection.
- Minor complications: greater frequency, include
 - Backache
 - post-LP headache
 - radicular pain or numbness.

Contraindications



- Lumbar puncture
 - No absolute contraindications to LP
 - Procedure is usually emergent to diagnose infection, therefore it may be performed under a variety of patient conditions
 - If non-emergent, may be rescheduled until patient holds blood thinners
- Myelography
 - Allergy to contrast media
 - Radiologist will determine if patient should be pre-medicated
 - Known increased intracranial pressure
 - Evidence of bleeding disorder
 - Generalized septicemia
 - Grossly bloody spinal tap
 - Infection at proposed puncture site
 - Pregnancy
 - Use of anticoagulant medications

	Normal	Bacterial	Viral	Fungal/TB
Pressure (cmH2O)	5-20	> 30	Normal or mildly increased	
Appearance	Normal	Turbid	Clear	Fibrin web
Protein (g/L)	0.18-0.45	> 1	< 1	0.1-0.5
Glucose (mmol/L)	2.5-3.5	<2.2	Normal	1.6-2.5
Gram stain	Normal	60-90% Positive	Normal	
Glucose - CSF:Serum Ratio	0.6	< 0.4	> 0.6	< 0.4
WCC	< 3	> 500	< 1000	100-500
Other		90% PMN	Monocytes 10% have >90% PMN 30% have >50% PMN	Monocytes

Urine Analysis

- **MARCOSCOPIC EXAMINATION OF THE URINE**

1. Color
2. Clarity
3. odor

- **Chemical examination using dipsticks**

1. Proteinuria
2. Glycosuria
3. Hematuria
4. Ketones
5. Nitrites
6. Leukocyte esterase test
7. Specific gravity
8. Osmolality
9. pH

- **MICROSCOPIC EXAMINATION OF URINE:**

1. Red Blood Cells
2. White Blood Cells
3. Epithelial Cells
4. Casts
5. Crystals
6. Bacteria
7. Yeast

Urine Test: Dipstick

Chemical Analysis



Urine Dipstick

- Glucose
- Bilirubin
- Ketones
- Specific Gravity
- Blood
- pH
- Protein
- Urobilinogen
- Nitrite
- Leukocyte Esterase



Quick Summary: Normal Values

- Normal color varies from almost colorless to dark amber.
- The urine specific gravity ranges between 1.003 and 1.030 (higher numbers mean a higher concentration).
- The normal pH range is from 4.6 to 8.0, with an average of 6.0.
- There is usually no detectable urine glucose, nitrites, ketones, or protein.
- There are usually no red blood cells in urine (<4/HPF).
- Hemoglobin is not normally found in the urine.
- Bilirubin is normally not detected in the urine. There may be a trace of urobilinogen in the urine.
- White blood cells (leukocytes) are not normally present in the urine (<4/HPF).

Leukocyte Esterase

- Leukocyte esterase is an enzyme present in most white blood cells (WBCs)
- A few white blood cells is normal in urine (see microscopic examination) and this test is **negative**
- When the number of WBCs in urine increases significantly, test will become **positive**
- WBC count in urine is high = Inflammation/infection in the kidney or urinary tract
- Common cause for WBCs in urine (leukocyturia): bacterial infection, eg. a bladder infection
- Source of contamination: vaginal secretions

Leukocyte esterase and Nitrite test

Leukocyte esterase

- Used to detect leucocytes in the urine
- The test is positive if there are more than 5 leucocytes/hpf.
- A negative leukocyte esterase test means that an infection is unlikely and that, without additional evidence of urinary tract infection, microscopic exam and/or urine culture need not be done to rule out significant bacteriuria.

Nitrite test

- Normal urine does not contain nitrites. Urine nitrite test is used for screening for bacteria
- A positive test indicates presence of more than 10 organisms/ml..

Approach to a sick child in ER

Clinical scenario

A 3 years old child presented to Emergency Department obtunded, lethargic and febrile after 5 days of profuse diarrhea.

- **What is your approach to the patient?**

After the first bolus of IV normal saline:

HR=160/min RR=36/min BP=70/52 mmHg Temp= 39c

- **What is your clinical assessment?**
- **What is your approach?**